REMARKS

Applicant concurrently files herewith an Excess Claim Fee Payment Letter, and corresponding fee, for one (1) excess independent claim and one (1) excess total claim.

Claims 1-32 are all of the claims presently pending in the application. Claims 1, 11, 20 and 30 have been amended to more particularly define the invention. Claim 32 has been added to provide more varied protection for the claimed invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Applicant gratefully acknowledges the Examiner's indication that claim 5 would be allowable if rewritten in independent form. However, Applicant respectfully submits that all of the claims are allowable.

Claims 1, 3, 11, 13, 20, 22, 30 and 31 stand rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being obvious over Haraguchi et al. (JP 2000-318433) (hereinafter "JP 2000-318433"). Claims 1-3, 11-13, 20-22 and 30-31 stand rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Zur et al. (U.S. Patent No. 5,383,341) (hereinafter "Zur"). Claims 4, 14 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Zur in view of Yomo et al. (JP No. 2001-253306) (hereinafter "JP 2001-253306"). Claims 6-8, 15-17 and 25-27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Zur et al. in view of Ruder (U.S. Patent No. 4,153,104) or Meckler (U.S. Patent No. 6,651,443). Claims 9-10, 18-19 and 28-29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Zur and JP 2001-253306 and further in view of Ng et al. (U.S. Patent Number 6,434,955) (hereinafter "Ng").

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The claimed invention (e.g., as defined by exemplary claim 1) is directed to a cooling apparatus for a system which generates heat therein. The cooling apparatus includes a chamber for receiving at least a portion of the heat generated by the system, by at least one of conduction and forced air, where the chamber contains a refrigerant therein, a condenser for receiving the refrigerant having been heated in the chamber, where the refrigerant is pressurized and cooled in the condenser, and at least one coil coupled to the condenser and leading to a region to be cooled, where the at least one coil has a first portion coupled to the condenser, a second portion downstream from the first portion, and a third portion downstream of the second portion. The second downstream portion contains an orifice for free expansion of the refrigerant to cause cooling of the region to be cooled. The third downstream portion leads from the region to be cooled back to the chamber. The portion of the heat generated by the system is recirculated to cool the region to be cooled. Thus, for example, in the case of a refrigerator, the heat that drives the refrigerator is used to cool the very source of the heat, thereby providing a feedback recycling of energy.

Conventional refrigeration apparatus use waste heat to provide cooling to another device by way of a gas absorption refrigerator. However, the conventional apparatus and methods have not transferred heat produced from one part of a device or system to another section of the same device or system to provide needed cooling.

Specifically, there are no conventional devices that provide recirculation of a portion of the waste heat from the device or system, and redirection of the heat to bring about local refrigeration, and in which the cold portion of the refrigeration apparatus is directed in turn to a different part of the system that requires cooling.

The claimed invention of exemplary claim 1, on the other hand, provides a cooling apparatus for a system which generates heat therein, wherein the portion of the heat generated by the system is recirculated to cool the region to be cooled (e.g., see Application at page 2, lines 11-13, page 5, lines 3-6 and page 5, lines 17-21). This allows a portion of the heat generated within a device or system to be recycled and redirected to bring about local refrigeration of a region of interest in the system. That is, the heat that drives the refrigerator is used to cool the very source of the heat (e.g., see Application at page 3, lines 1-10).

II. THE PRIOR ART REFERENCES

A. The JP 2000-318433 Reference

The Examiner alleges that JP 2000-318433 teaches the claimed invention of claims 1, 3, 11, 13, 20, 22, 30 and 31. Applicant submits, however, that there are elements of the claimed invention which are neither taught nor suggested by JP 2000-318433 .

That is, JP 2000-318433 does not teach or suggest "*wherein said at least a portion of said heat generated by the system is recirculated to cool said region to be cooled*" as recited in claim 1, and somewhat similarly recited in claims 11, 20 and 30.

The Examiner attempts to rely on Figure 5 of JP 2000-318433 to support her allegations. The Examiner, however, is clearly incorrect.

That is, nowhere in this Figure (nor anywhere else for that matter) does JP 2000-318433 teach or suggest a cooling apparatus for a system which generates heat therein, wherein the portion of the heat generated by the system is recirculated to cool the region to be cooled. Indeed, the Examiner has provided no support in JP 2000-318433 for this feature. The Examiner merely states that "[t]he generator 11 is heated by a heat source of waste heat of a vehicle" (see Office Action at page 2) (emphasis Applicant's).

Even assuming, arguendo, that the Examiner's statement above is correct and has support in JP 2000-318433, JP 2000-318433 would still not teach or suggest that the portion of the heat generated by the system is recirculated to cool the region to be cooled as taught by the claimed invention.

In JP 2000-318433, the waste heat of the vehicle is the exhaust of the vehicle which is exterior to the cabin of the vehicle. This type of cooling is conventionally known. The waste heat in JP 2000-318433, however, is not part of the same space that is being cooled nor is the source of the heat to drive the refrigerator part of the same heat that is being reduced. The source of the heat in the vehicle is ambient temperature of the exterior, such as the weather in the exterior atmosphere, which is not the source of the heat driving the refrigerator. The system in JP 2000-318433 is not a closed system as is taught by the claimed invention.

If the Examiner wishes, however, to maintain this rejection, Applicant respectfully requests the Examiner to provide Applicant with an English language translation of the portions of JP 2000-318433 which the Examiner is relying upon for supporting her allegations.

Therefore, Applicant submits that there are elements of the claimed invention that are not taught or suggested by JP 2000-318433. Therefore, the Examiner is respectfully requested to withdraw this rejection.

B. The Zur Reference

The Examiner alleges that Zur teaches the claimed invention of claims 1-3, 11-13, 20-

22, 30 and 31. Applicant submits, however, that there are elements of the claimed invention which are neither taught nor suggested by Zur.

That is, Zur does not teach or suggest "*wherein said at least a portion of said heat generated by the system is recirculated to cool said region to be cooled*" as recited in claim 1, and somewhat similarly recited in claims 11, 20 and 30.

The Examiner attempts to rely on Figure 1 of Zur to support her allegations. The Examiner, however, is clearly incorrect.

That is, nowhere in this Figure (nor anywhere else for that matter) does Zur teach or suggest a cooling apparatus for a system which generates heat therein, wherein the portion of the heat generated by the system is recirculated to cool the region to be cooled. Indeed, the Examiner has provided no support in Zur for this feature. The Examiner merely states that "a generator 12 heating by the waste heat from engine" (see Office Action at page 2).

Even assuming, arguendo, that the Examiner's statement above is correct and has support in Zur, Zur would still not teach or suggest that the portion of the heat generated by the system is recirculated to cool the region to cooled as taught by the claimed invention.

In Zur, similarly to JP 2000-318433 discussed above, the waste heat of the vehicle is the exhaust of the vehicle which is exterior to the cabin of the vehicle. This type of cooling is conventionally known. The waste heat in Zur, however, is not part of the same space that is being cooled nor is the source of the heat to drive the refrigerator part of the same heat that is being reduced. The source of the heat in the vehicle is ambient temperature of the exterior, such as the weather in the exterior atmosphere, which is not the source of the heat driving the refrigerator. The system in Zur is not a closed system as is taught by the claimed invention.

Furthermore, there is no heat derived from conduction in Zur, as is taught by the claimed invention. Again, the heat source in Zur is ancillary to the part being cooled and is not even in the same space (see Zur at column 4, line 23), which is taught by the claimed invention. Also, there is also no electrical booster source in Zur, as in some of the dependent claims. Moreover, Zur is silent on using water cooled by the refrigeration unit to be in physical contact with the source of the heat to provide cooling, as in some of the dependent claims.

Therefore, Applicant submits that there are elements of the claimed invention that are not taught or suggested by Zur. Therefore, the Examiner is respectfully requested to withdraw this rejection.

C. The JP 2001-253306 Reference

The Examiner alleges that JP 2001-253306 would have been combined with Zur to teach the claimed invention of claims 4, 14 and 23. Applicant submits, however, that these references would not have been combined as alleged by the Examiner and that even if combined, would not teach or suggest each and every element of the claimed invention.

That is, Applicants submit that these references would not have been combined as alleged by the Examiner. Indeed, the Examiner has not provided any motivation in JP 2001-253306. The Examiner has merely stated that it would have been obvious to combine JP 2001-253306 with Zur to cool the electronic components of Zur to avoid overheating. However, the Examiner has not provided an English translation of JP 2001-253306 and has not provided any support in JP 2001-253306 that shows where JP 2001-253306 would provide cooling of the electronic components of Zur to avoid overheating. Therefore, the Examiner has clearly failed to make a prima facie case of obviousness, because the Examiner has failed to properly provide a motivation to combine the references.

Furthermore, the Examiner's motivation to modify Zur ("to prevent overheat") does not appear to be a problem in Zur that would require a solution. Thus, as pointed out in MPEP 2143.01, the Examiner's motivation is "improper". "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination" (emphasis added by Applicant). Furthermore, merely stating that the references are in the same field of endeavor does not provide a motivation to combine the references without some teaching of the motivation in the references.

Moreover, neither Zur nor JP 2001-253306 teaches or suggests "*wherein said at least a portion of said heat generated by the system is recirculated to cool said region to be cooled*" as recited in claim 1, and similarly recited in claims 11, 20 and 30.

The Examiner does not provide specific support in JP 2001-253306 to support her allegations. The Examiner has merely relied upon the disclosure of JP 2001-253306. The Examiner, however, is clearly incorrect.

That is, nowhere does JP 2001-253306 teach or suggest a cooling apparatus for a system which generates heat therein wherein the portion of the heat generated by the system is recirculated to cool the region to be cooled. Indeed, the Examiner has merely relied upon JP

2001-253306 as teaching cooling electronic components to avoid overheating. The Examiner has not even alleged that JP 2001-253306 teaches or suggests that the portion of the heat generated by the system is recirculated to cool the region to be cooled.

It appears that JP 2001-253306 merely teaches using exhaust gases from a vehicle to cool the inside of a cabin. However, the source of the heat and the region to be cooled are completely separate.

If the Examiner wishes, however, to maintain this rejection, Applicant respectfully requests the Examiner to provide Applicant with an English language translation of the portions of JP 2000-318433 which the Examiner is relying upon for supporting her allegations.

Therefore, Applicant submits that these references would not have been combined, and that even if combined the alleged combination would not teach or suggest each and every element of the claimed invention. Therefore, the Examiner is respectfully requested to withdraw this rejection.

D. The Ruder Reference

The Examiner alleges that Ruder would have been combined with Zur to teach the claimed invention of claims 6-8, 15-17 and 25-27. Applicant submits, however, that these references would not have been combined as alleged by the Examiner and that even if combined, would not teach or suggest each and every element of the claimed invention.

That is, the Examiner's motivation to modify Zur ("to provide required heat") does not appear to be a problem in Zur that would require a solution. Thus, as pointed out in MPEP 2143.01, the Examiner's motivation is "improper". "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination" (emphasis added by Applicant). Furthermore, merely stating that the references are in the same field of endeavor does not provide a motivation to combine the references without some teaching of the motivation in the references.

Moreover, neither Zur nor Ruder teaches or suggests "*wherein said at least a portion of said heat generated by the system is recirculated to cool said region to be cooled*" as recited in claim 1, and similarly recited in claims 11, 20 and 30.

The Examiner does not provide specific support in Ruder to support her allegations.

The Examiner has merely relied upon the disclosure of Ruder. The Examiner, however, is clearly incorrect.

That is, nowhere does Ruder teach or suggest a cooling apparatus for a system which generates heat therein wherein the portion of the heat generated by the system is recirculated to cool the region to be cooled. Indeed, the Examiner has merely relied upon Ruder as teaching an auxiliary electric heater. The Examiner has not even alleged that Ruder teaches or suggests that the portion of the heat generated by the system is recirculated to cool the region to be cooled.

In fact, Ruder teaches that the water which is heated by solar energy is used to regulate the temperature of a building (see Ruder at column 6, line 64). The absorption refrigerator is used to regulate the temperature of the water which is subsequently used to regulate the temperature of a building. Obviously, the source of energy to drive the refrigerator is not derived from part of the space being cooled, as is taught by the claimed invention. Furthermore, the source of the heat is not waste heat, rather it is solar energy.

Therefore, Applicant submits that these references would not have been combined, and that even if combined the alleged combination would not teach or suggest each and every element of the claimed invention. Therefore, the Examiner is respectfully requested to withdraw this rejection.

E. The Meckler Reference

The Examiner alleges that Meckler would have been combined with Zur to teach the claimed invention of claims 6-8, 15-17 and 25-27. Applicant submits, however, that these references would not have been combined as alleged by the Examiner and that even if combined, would not teach or suggest each and every element of the claimed invention.

That is, the Examiner's motivation to modify Zur ("to provide required heat") does not appear to be a problem in Zur that would require a solution. Thus, as pointed out in MPEP 2143.01, the Examiner's motivation is "improper". "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination" (emphasis added by Applicant). Furthermore, merely stating that the references are in the same field of endeavor does not provide a motivation to combine the references without some teaching of the motivation in the references.

Moreover, neither Zur nor Meckler teaches or suggests "*wherein said at least a portion of said heat generated by the system is recirculated to cool said region to be cooled*" as recited in claim 1, and similarly recited in claims 11, 20 and 30.

The Examiner does not provide specific support in Meckler to support her allegations. The Examiner has merely relied upon the disclosure of Meckler. The Examiner, however, is clearly incorrect.

That is, nowhere does Meckler teach or suggest a cooling apparatus for a system which generates heat therein wherein the portion of the heat generated by the system is recirculated to cool the region to be cooled. Indeed, the Examiner has merely relied upon Meckler as teaching an auxiliary electric heater. The Examiner has not even alleged that Meckler teaches or suggests that the portion of the heat generated by the system is recirculated to cool the region to be cooled.

In fact, Meckler teaches that the initial heat comes from exhaust gases from a gas turbine exterior to the space being cooled. The cooled water is produced by a refrigeration from a gas refrigerator whose source of heat is additional or unused heat from the gas turbine. Overall, there is a complicated exchange of heat amongst exhaust from a steam turbine, super heated liquid that is then cooled and the cooled water used to cool a building. Again, the system in Meckler uses heat from a source that is not at all related to the space or device being cooled.

Therefore, Applicant submits that these references would not have been combined, and that even if combined the alleged combination would not teach or suggest each and every element of the claimed invention. Therefore, the Examiner is respectfully requested to withdraw this rejection.

E. The Ng Reference

The Examiner alleges that Ng would have been combined with Zur and JP 2001-253306 to teach the claimed invention of claims 6-8, 15-17 and 25-27. Applicant submits, however, that these references would not have been combined as alleged by the Examiner and that even if combined, would not teach or suggest each and every element of the claimed invention.

That is, the Examiner has not provided a motivation to combine Ng with Zur and Yomo. Applicant respectfully points out that MPEP § 2142 clearly states that "[t]he initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. 'To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention of the examiner must present a convincing line or reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references". Furthermore, "[w]hen the motivation to combine the teachings of the references is not immediately apparent, it is the duty of the examiner to explain why the combination of the teachings is proper". The Examiner has not provided any reasoning to support a motivation to combine these references. Therefore, the Examiner has clearly not met the initial burden and thus has not made a *prima facie* case of obviousness.

Moreover, neither Zur nor JP 2001-253306 nor Ng teaches or suggests "*wherein said at least a portion of said heat generated by the system is recirculated to cool said region to be cooled*" as recited in claim 1, and similarly recited in claims 11, 20 and 30.

The Examiner does not provide specific support in Ng to support her allegations. The Examiner has merely relied upon the disclosure of Ng. The Examiner, however, is clearly incorrect.

That is, nowhere does Ng teach or suggest a cooling apparatus for a system which generates heat therein wherein the portion of the heat generated by the system is recirculated to cool the region to be cooled. Indeed, the Examiner has merely relied upon Ng as teaching that heat can be conducted through the spreader or direct contact with a surface to be cooled. The Examiner has not even alleged that Ng teaches or suggests that the portion of the heat generated by the system is recirculated to cool the region to be cooled.

In fact, Ng merely teaches a heat source for a refrigerator where a portion of the heat is from a thermoelectric cooler. The resultant coolant from the gas refrigerator requires an intermediate step that is not necessary in the claimed invention.

Therefore, Applicant submits that these references would not have been combined, and that even if combined the alleged combination would not teach or suggest each and every element of the claimed invention. Therefore, the Examiner is respectfully requested to withdraw this rejection.

III. NEW CLAIMS

New claim 32 has been added to provide more varied protection for the claimed invention and to claim additional features of the invention. This claim is independently patentable because of the novel features recited therein.

Applicant respectfully submits that new claim 32 is patentable over any combination of the applied references at least for analogous reasons to those set forth above with respect to claims 1-31.

IV. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 1-32, all of the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Assignee's Deposit Account No. 50-0510.

Respectfully Submitted,

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